

■ General Description

The AME8570M family allows the user to customize the CPU reset function without any external components. The user has several choices of reset voltage thresholds, reset time intervals, and output driver configurations, all of which are preset at the factory.

These circuits monitor the power supply voltage of μP based systems. When the power supply voltage drops below the voltage threshold a reset is asserted immediately (within an interval T_{D1}). The reset remains asserted after the supply voltage rises above the voltage threshold for a time interval, T_{D2} . The reset output may be either active high (RESET) or active low (RESETB). The reset output may be configured as either push/pull or open drain. The state of the reset output is guaranteed to be correct only when supply voltage is greater than 1V.

The AME8570M also provides a reset manually by pulling the MRB input to ground.

Space saving SC-70 package and micropower quiescent current ($<3.0\mu A$) make this family a natural for portable battery powered equipment.

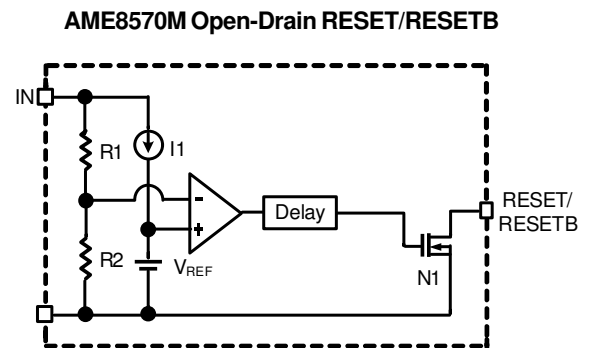
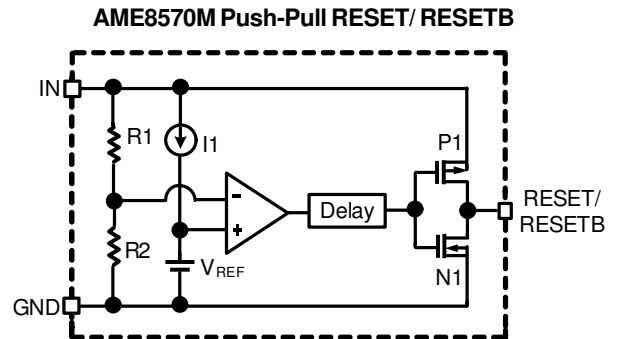
■ Features

- Small Packages : SC-70-4, SOT-23, TSOT-23A, SOT-25, TSOT-25A, SOT-143
- Tight Voltage Threshold Tolerance: $\pm 1.50\%$
- Wide Temperature Range : $-40^{\circ}C$ to $+85^{\circ}C$
- Low Quiescent Current $<3.0\mu A$
- Manual Reset Input Option
- Green Products Meet RoHS Standards

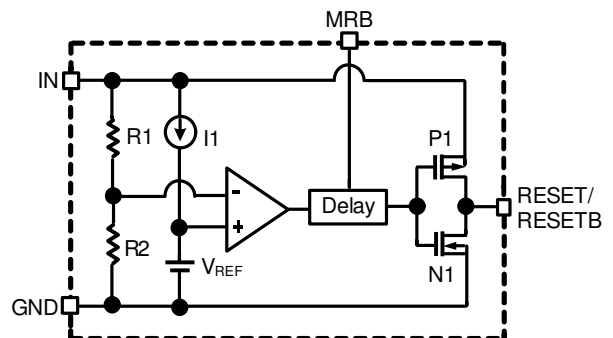
■ Applications

- Portable Electronics
- Power Supplies
- Computer Peripherals
- Data Acquisition Systems
- Applications using CPUs
- Consumer Electronics

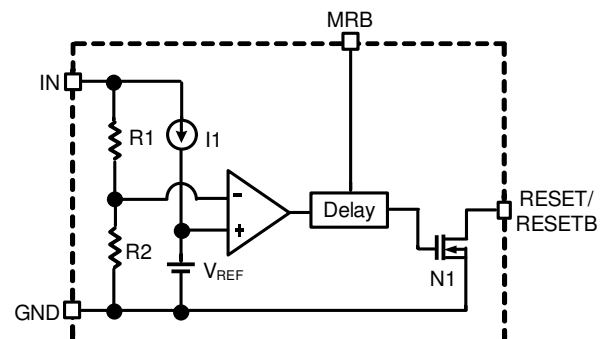
■ Functional Block Diagram



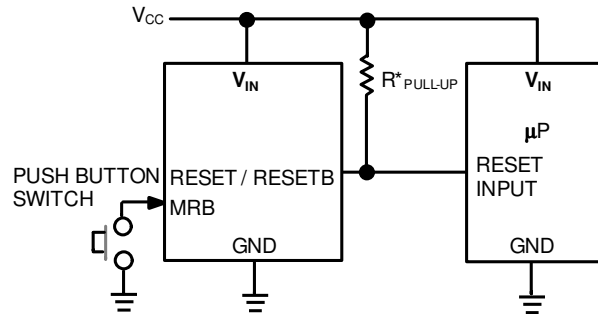
AME8570M Push-Pull RESET/ RESETB with MRB



AME8570M Open-Drain RESET/RESETB with MRB



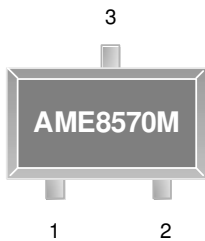
■ Typical Operating Circuit



Note: * External pull-up resistor is required if open-drain output is used. 10KΩ is recommended.

■ Pin Configuration

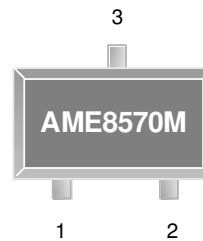
SOT-23/TSOT-23A
Top View



AME8570M-AETxxxxxx

1. GND
2. RESET/RESETB
3. IN

SOT-23/TSOT-23A
Top View



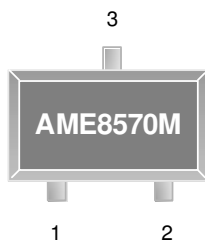
AME8570M-BETxxxxxx

1. RESET/RESETB
2. GND
3. IN

* Die Attach:
Non-Conductive Epoxy

* Die Attach:
Non-Conductive Epoxy

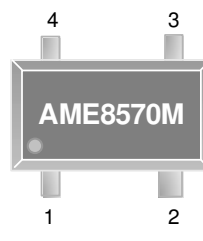
SOT-23/TSOT-23A
Top View



AME8570M-CETxxxxxx

1. RESET/RESETB
2. IN
3. GND

SC-70-4
Top View



AME8570M-AIUxxxxxx

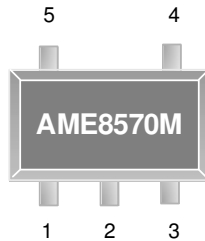
1. GND
2. RESET/RESETB
3. MRB
4. IN

* Die Attach:
Conductive Epoxy

* Die Attach:
Non-Conductive Epoxy

■ Pin Configuration (Contd.)

SOT-25/TSOT-25A
Top View

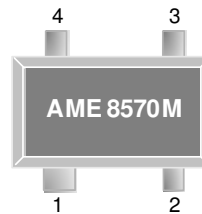


AME8570M-AEVxxxxxx

1. RESET/RESETB
2. IN
3. GND
4. NC
5. NC

* Die Attach:
Non-Conductive Epoxy

SOT-143
Top View



AME8570M-A4Uxxxxxx

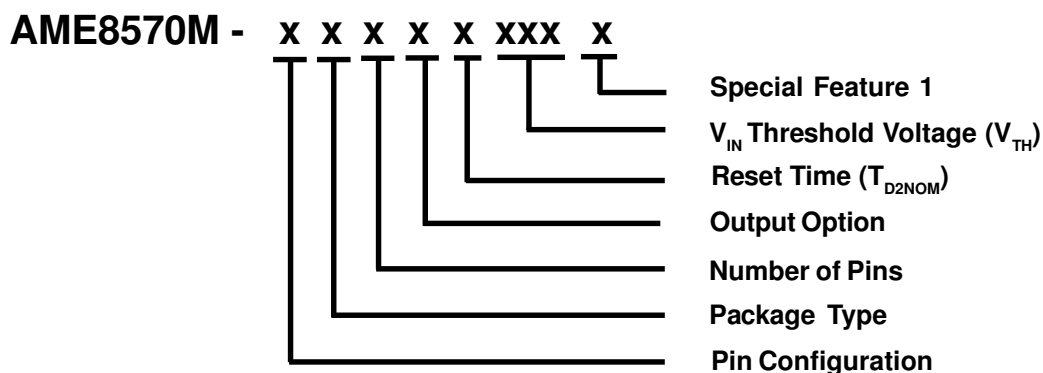
1. GND
2. RESET/RESETB
3. MRB
4. IN

* Die Attach:
Conductive Epoxy

■ Pin Description

Pin Number					Pin Name	Pin Description
SOT-23 / SOT-23A			SOT-143	SOT-25 / TSOT-25A		
A	B	C				
1	2	3	1	3	GND	Ground.
2	1	1	2	1	RESET / RESETB	This pin can be ordered as RESET or RESETB. Reset is active high. RESETB is active low. It is also available with an open-drain or push-pull output.
3	3	2	4	2	IN	Positive power supply. A reset is asserted after this voltage drops below a predetermined level. After V _{IN} rises above that level the reset output remains asserted until the end of the reset timeout period.
N/A			3	N/A	MRB	Manual RESET. Active low. Pulling this pin low forces a reset. After a low to high transition reset, remains asserted for exactly one reset timeout period. This pin is internally pulled high. The pin is floating or tied to V _{IN} , if it is unused.
N/A				4, 5	NC	No Internal Connection.

■ Ordering Information



Pin Configuration	Package Type	Number of Pins	Output Options	Reset Time (T _{D2NOM})	V _{IN} Threshold Voltage (V _{TH})	Special Feature 1
A 1. GND 2. RESET/ 3. IN (SOT-23) (TSOT-23A)	E: SOT-2X I: SC-70 4: SOT-143	T: 3 U: 4 V: 5	A: RESETB/PP B: RESETB/OD C: RESET/PP D: RESET/OD (RESET=Active High) (RESETB=Active Low) (PP=Push-pull out) (OD=Open-Drain output)	A: 1.5ms E: 150ms F: 210ms	160: V _{TH} = 1.60V 180: V _{TH} = 1.80V 200: V _{TH} = 2.00V 210: V _{TH} = 2.10V 230: V _{TH} = 2.30V 232: V _{TH} = 2.32V 240: V _{TH} = 2.40V 263: V _{TH} = 2.63V 270: V _{TH} = 2.70V 280: V _{TH} = 2.80V 293: V _{TH} = 2.93V 300: V _{TH} = 3.00V 308: V _{TH} = 3.08V 400: V _{TH} = 4.00V 420: V _{TH} = 4.20V 438: V _{TH} = 4.38V 450: V _{TH} = 4.50V 463: V _{TH} = 4.63V	N/A: SOT-2X K: 0.9mm max height (for TSOT-2XA Only)
B 1. Reset/ 2. GND 3. IN (SOT-23) (TSOT-23A)						
C 1. Reset/ 2. IN 3. GND (SOT-23) (TSOT-23A)						
A 1. GND 2. RESET/ 3. MRB 4. IN (SC-70-4)						
A 1. RESET/ 2. IN 3. GND 4. NC 5. NC (SOT-25) (TSOT-25A)						
A 1. GND 2. RESET/ 3. MRB 4. IN (SOT-143)						

■ Available Options

Part Number	Marking	Detect Voltage	Package	Operating Ambient Temperature Range
AME8570M-AIUCF160	CBSw	1.60V	SC-70-4	-40°C to +85°C
AME8570M-AIUCF180	CCVw	1.80V	SC-70-4	-40°C to +85°C
AME8570M-AIUAF263	CBKw	2.63V	SC-70-4	-40°C to +85°C
AME8570M-AIUAF293	COYw	2.93V	SC-70-4	-40°C to +85°C
AME8570M-AIUBF293	CBTw	2.93V	SC-70-4	-40°C to +85°C
AME8570M-AIUAA463	CBPw	4.63V	SC-70-4	-40°C to +85°C
AME8570M-AIUAE463	CBQw	4.63V	SC-70-4	-40°C to +85°C
AME8570M-AIUAF463	CBRw	4.63V	SC-70-4	-40°C to +85°C
AME8570M-A4UAE293	CLXMXX	2.93V	SOT-143	-40°C to +85°C
AME8570M-A4UAF263	CDMMXX	2.63V	SOT-143	-40°C to +85°C
AME8570M-A4UAF463	CIUMXX	4.63V	SOT-143	-40°C to +85°C
AME8570M-A4UAF293	CBUMXX	2.93V	SOT-143	-40°C to +85°C
AME8570M-A4UAF308	CHOMXX	3.08V	SOT-143	-40°C to +85°C
AME8570M-A4UBE230	CHUMXX	2.30V	SOT-143	-40°C to +85°C
AME8570M-A4UBE308	CHMMXX	3.08V	SOT-143	-40°C to +85°C
AME8570M-A4UBF263	CIVMXX	2.63V	SOT-143	-40°C to +85°C
AME8570M-A4UBF293	CIXMXX	2.93V	SOT-143	-40°C to +85°C
AME8570M-A4UBF308	CHNMXX	3.08V	SOT-143	-40°C to +85°C
AME8570M-A4UBF463	CIYMXX	4.63V	SOT-143	-40°C to +85°C
AME8570M-AETBE180	CFVMXX	1.80V	SOT-23	-40°C to +85°C
AME8570M-AETBE200	CFQMXX	2.00V	SOT-23	-40°C to +85°C

Note:

1. The first 3 places represent product code. It is assigned by AME such as $\overline{\text{CBS}}$.
2. A bar on top of first letter represents Green Part such as CBS.
3. w represent the date code and please refer to date code rule section for detail information.
4. The last 3 places MXX represent Marking Code. It contains M as date code in "month", XX as LN code and that is for AME internal use only. Please refer to date code rule section for detail information.
5. Please consult AME sales office or authorized Rep./Distributor for the availability of output voltage and package type.

■ Available Options (Contd.)

Part Number	Marking	Detect Voltage	Package	Operating Ambient Temperature Range
AME8570M-AETAF232	CEDMXX	2.32V	SOT-23	-40°C to +85°C
AME8570M-AETAE263	CEFMXX	2.63V	SOT-23	-40°C to +85°C
AME8570M-AETAF263	CEGMXX	2.63V	SOT-23	-40°C to +85°C
AME8570M-BETAA270	CEEMXX	2.70V	SOT-23	-40°C to +85°C
AME8570M-AETAF270	CFOMXX	2.70V	SOT-23	-40°C to +85°C
AME8570M-AETAE293	CFSMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-AETAF293	CECMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-AETBA300	CLYMXX	3.00V	SOT-23	-40°C to +85°C
AME8570M-AETBF232	CMLMXX	2.32V	SOT-23	-40°C to +85°C
AME8570M-AETBF263	CIZMXX	2.63V	SOT-23	-40°C to +85°C
AME8570M-AETBF293	CFKMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-AETCF232	CMMMXX	2.32V	SOT-23	-40°C to +85°C
AME8570M-AETCF293	CGAMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-BETAF180	CMFMXX	1.80V	SOT-23	-40°C to +85°C
AME8570M-BETAF240	CMGMXX	2.40V	SOT-23	-40°C to +85°C
AME8570M-BETAF263	CJAMXX	2.63V	SOT-23	-40°C to +85°C
AME8570M-BETAF293	CFLMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-BETAF308	CJBMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-BETAF463	CJCMXX	4.63V	SOT-23	-40°C to +85°C
AME8570M-BETBF263	CJDMXX	2.63V	SOT-23	-40°C to +85°C
AME8570M-BETBF293	CFHMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-BETBF308	CJEMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-BETBF438	CJSMXX	4.38V	SOT-23	-40°C to +85°C
AME8570M-BETBF463	CJFMXX	4.63V	SOT-23	-40°C to +85°C
AME8570M-BETCF263	CMIMXX	2.63V	SOT-23	-40°C to +85°C

■ Available Options (Contd.)

Part Number	Marking	Detect Voltage	Package	Operating Ambient Temperature Range
AME8570M-BETCF293	CMJMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-BETCF308	CMKMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-CETAE293	CGXMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-CETBE293	CGYMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-CETBF293	CFMMXX	2.93V	SOT-23	-40°C to +85°C
AME8570M-AETAE308	CHHMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-AETAF308	CEHMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-AETBE308	CFNMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-AETBF308	CFZMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-AETCF308	CGBMXX	3.08V	SOT-23	-40°C to +85°C
AME8570M-AETAE400	CHGMXX	4.00V	SOT-23	-40°C to +85°C
AME8570M-AETAF400	CFYMXX	4.00V	SOT-23	-40°C to +85°C
AME8570M-CETBE420	CFXMXX	4.20V	SOT-23	-40°C to +85°C
AME8570M-AETAF438	CFTMXX	4.38V	SOT-23	-40°C to +85°C
AME8570M-AETBF438	CFWMXX	4.38V	SOT-23	-40°C to +85°C
AME8570M-AETCF438	CFPMXX	4.38V	SOT-23	-40°C to +85°C
AME8570M-AETAF463	CFRMXX	4.63V	SOT-23	-40°C to +85°C
AME8570M-AETCF463	CFUMXX	4.63V	SOT-23	-40°C to +85°C
AME8570M-AETBE463	CHSMXX	4.63V	SOT-23	-40°C to +85°C
AME8570M-AEVAF293	CJGMXX	2.93V	SOT-25	-40°C to +85°C
AME8570M-AEVAF308	CJHMXX	3.08V	SOT-25	-40°C to +85°C
AME8570M-AEVAF463	CJIMXX	4.63V	SOT-25	-40°C to +85°C
AME8570M-AEVBE293	CHTMXX	2.93V	SOT-25	-40°C to +85°C
AME8570M-AEVBF293	CJJMXX	2.93V	SOT-25	-40°C to +85°C
AME8570M-AEVBF308	CJKMXX	3.08V	SOT-25	-40°C to +85°C
AME8570M-AEVBF463	CJLMXX	4.63V	SOT-25	-40°C to +85°C

■ Absolute Maximum Ratings

Parameter		Maximum	Unit
Supply Voltage		6	V
Input Current, V_{IN}		20	mA
Output Current, RESET, RESETB		20	
ESD Classification	HBM	2	kV
	MM	200	V

Caution: Stress above the listed in absolute maximum ratings may cause permanent damage to the device.

■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Ambient Temperature Range	T_A	-40 to +85	°C
Junction Temperature Range	T_J	-40 to +125	
Storage Temperature Range	T_{STG}	-65 to +150	

■ Thermal Information

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance* (Junction to Case)	SOT-23 TSOT-23A	Conductive Epoxy	θ_{JC}	81	$^{\circ}\text{C} / \text{W}$
	SOT-143			130	
	SOT-23 SOT-25	Non-Conductive Epoxy		140	
	TSOT-23A TSOT-25A			130	
	SC-70-4			120	
Thermal Resistance (Junction to Ambient)	SOT-23	Conductive Epoxy	θ_{JA}	260	$^{\circ}\text{C} / \text{W}$
	TSOT-23A			230	
	SOT-143			350	
	SOT-23 SOT-25	Non-Conductive Epoxy		280	
	TSOT-23A TSOT-25A			250	
	SC-70-4			400	
Internal Power Dissipation	SOT-23	Conductive Epoxy	P_D	400	mW
	TSOT-23A			455	
	SOT-143			285	
	SOT-23 SOT-25	Non-Conductive Epoxy		400	
	TSOT-23A TSOT-25A			400	
	SC-70-4			300	
Solder Iron (10 Sec) **				350	$^{\circ}\text{C}$

* Measure θ_{JC} on center of molding compound if IC has no tab.

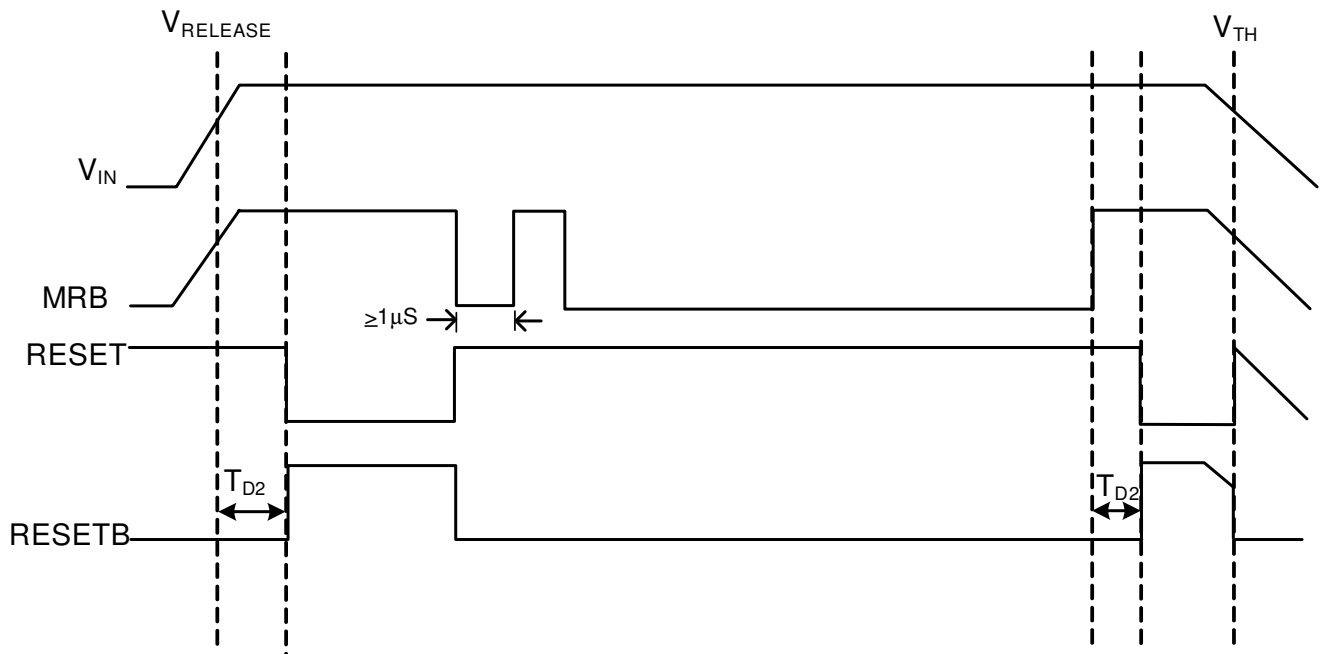
** MIL-STD-202G210F

■ Electrical Specifications

$T_A = 25^\circ\text{C}$ unless otherwise noted.

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
V _{IN} Range	V _{RANGE}	T _A = -40°C to +85°C		1		5.5	V
Supply Current	I _{IN}	V _{IN} = V _{TH} *1.10 MRB unconnected				3	μA
		V _{IN} = V _{TH} *1.10, T _A =-40°C~+85°C MRB unconnected				5	
RESET Threshold	V _{TH}			V _{TH} -1.5%		V _{TH} +1.5%	V
		T _A = -40°C to +85°C		V _{TH} -2%		V _{TH} +2%	
Hysteresis Range	V _{HYST}	V _{Release} - V _{TH}		10	30	60	mV
RESETB Output Voltage High	V _{OH}	V _{IN} > V _{TH (MAX)}	I _{SOURCE} = 0.5mA, V _{IN} > 1.8V	0.8V _{IN}			V
			I _{SOURCE} = 0.15mA, 1.8V >= V _{IN} > 1.0V				
RESET Output Voltage High		V _{IN} < V _{TH (MIN)}	I _{SOURCE} = 0.5mA, V _{IN} > 1.8V				
			I _{SOURCE} = 0.15mA, 1.8V >= V _{IN} > 1.0V				
RESETB Output Voltage Low	V _{OL}	V _{IN} < V _{TH (MIN)}	I _{SINK} = 1.2mA, T _J = -40°C to +85°C			0.2	V
RESET Output Voltage Low		V _{IN} > V _{TH (MAX)}					
V _{IN} to RESET Delay	T _{D1}	V _{IN} = V _{TH} -100mV; T _A = -40°C to +85°C			40		μS
RESET Timeout Period	T _{D2}	T _A = -40°C to +85°C	Version A	0.5	1.5	5	mS
			Version E	80	150	230	mS
			Version F	140	210	500	mS
MRB Input Threshold	MRB _{IL}	V _{IN} = V _{TH} x 1.2				0.7	V
	MRB _{IH}			0.8V _{IN}			
MRB Pulse Width				1			μS
MRB Noise Immunity (pulse width with no reset)					100		nS
MRB to RESET Delay					500		nS
MRB Pull Up Resistance				80		120	KΩ

■ Timing Diagram



■ Applications Information

Supply Transients

These devices have a certain immunity to fast negative going transients. In the following pages the graph titled "Glitch Rejection" indicates the maximum allowable glitch amplitude and duration to avoid triggering an unintended reset. As shown in the graph shorter transients can have larger amplitudes without triggering resets.

■ Detailed Description

The AME8570M are designed to interface with the reset input of a microprocessor and to prevent code-execution errors due to power up, power down, and other power supply errors.

Reset Output

Each output pin in the family can be configured to be either push-pull or open-drain. In addition each output may be either active high or active low. Active high reset outputs are denoted as RESET. Active low reset outputs are denoted as RESETB. The selection guide on this data sheet shows all possible combinations of output driver configuration.

A reset will be asserted if any of two things happen:

- 1) V_{IN} drops below the threshold (V_{TH})
- 2) The MRB pin pulled low

The reset will remain asserted for the prescribed reset interval after:

- 1) V_{IN} rises above the threshold (V_{TH})
- 2) MRB goes high

Manual Reset Input

The AME8570M feature a manual reset feature (MRB). A logic low on the MRB pin asserts a reset. The reset remains asserted as long as the MRB pin remains low. After the MRB pin transitions to a high state the reset remains asserted for the prescribed reset interval (T_{D2}).

(1) Normal MRB Signal (pulse width must $\geq 1\mu S$)

(2) MRB Noise Immunity (pulse width duration no reset $\sim 100nS$)

The MRB pin is internally pulled up to V_{IN} by a 100K resistor. It is internally debounced to reject switching transients.

The MRB pin is ESD protected by diodes connected to V_{IN} and GND. So the MRB pin should never be driven higher than V_{IN} or lower than GND.

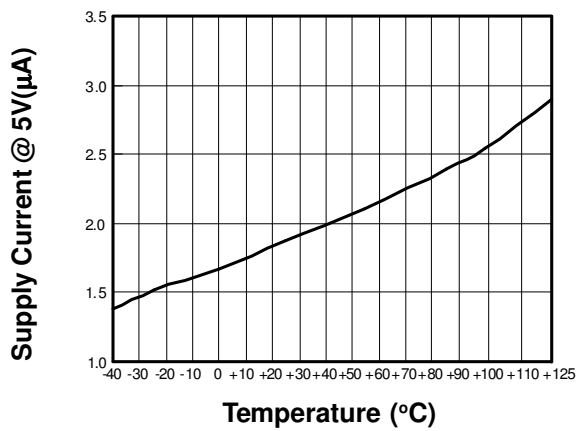
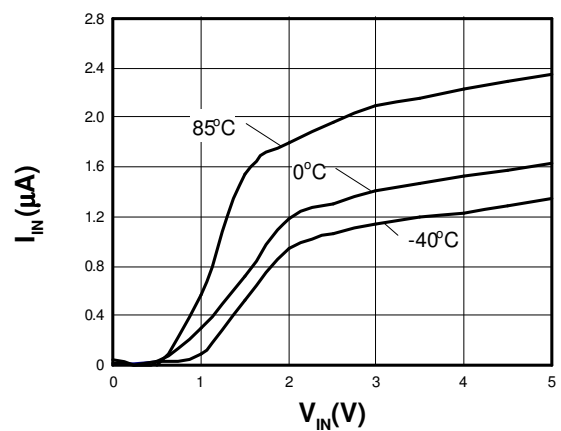
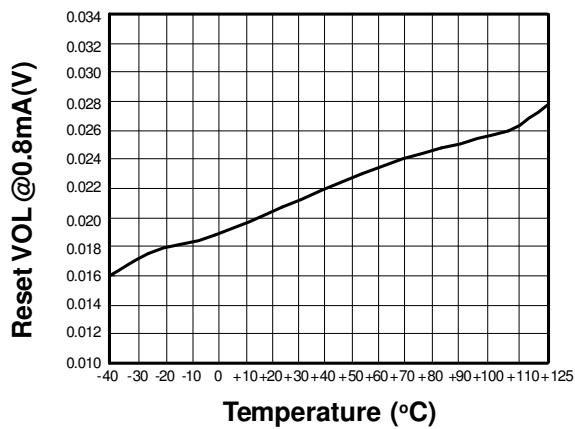
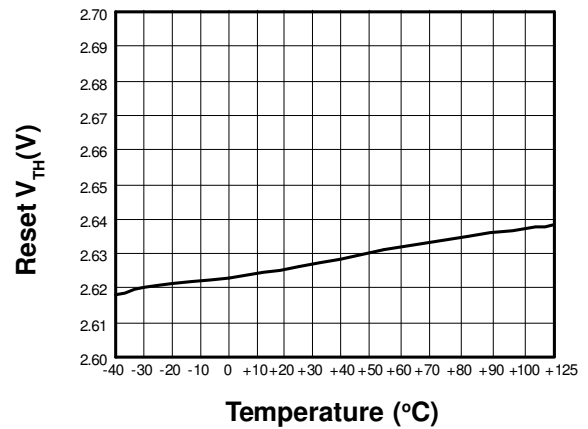
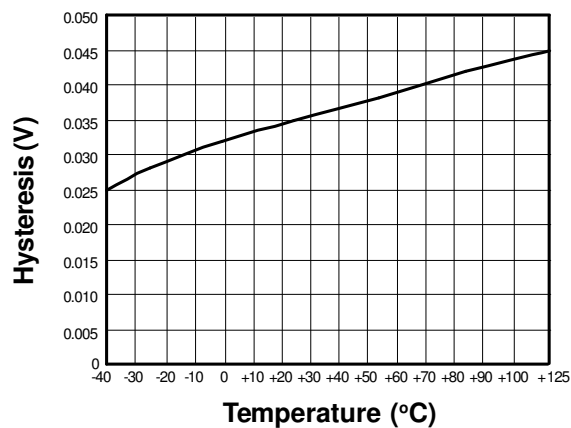
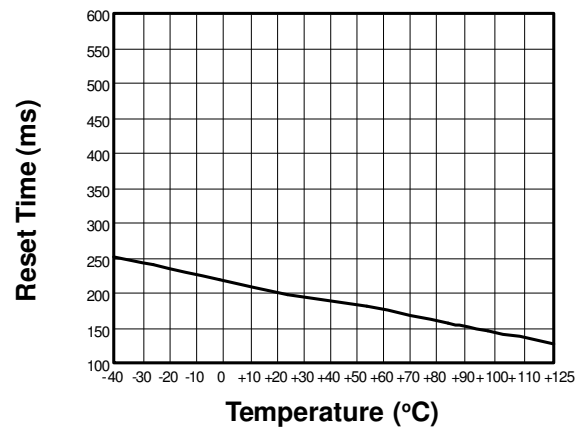
Glitch Rejection

The AME8570M family will reject negative going transients on the V_{IN} line to some extent. The smaller the duration of the transient the larger its amplitude may be without triggering a reset. The "Glitch Rejection" chart in the graphs section of this datasheet shows the relation between glitch amplitude and allowable glitch duration to avoid unintended resets.

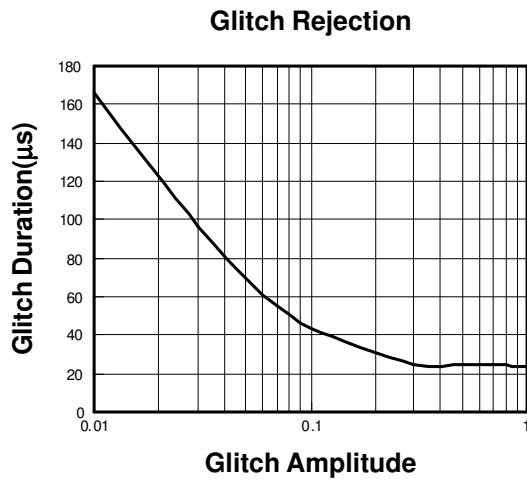
Accurate Output State at Low V_{IN}

With V_{IN} voltage on the order of the MOS transistor threshold ($< 1.0V$) the outputs of the AME8570M may become undefined. For parts with active low output (RESETB) a resistor placed between RESETB and GND on the order of 100K will ensure that the RESETB output stays low when V_{IN} is lower than the threshold voltage of the part. In a like manner a resistor on the order of 100K when placed between RESET and V_{IN} will ensure parts with active high output (RESET) will remain high when V_{IN} is lower than the threshold voltage of the part.

■ Characterization Curve

 I_{IN} vs. Temperature

 I_{IN} vs. V_{IN}

Reset VOL vs. Temperature

Reset V_{TH} vs. Temperature

Threshold Hysteresis vs. Temperature

Reset Time vs. Temperature


■ Characterization Curve (Contd.)



■ Date Code Rule

Month Code	
1: January	7: July
2: February	8: August
3: March	9: September
4: April	A: October
5: May	B: November
6: June	C: December

Marking						Year
A	A	A	M	X	X	xxx0
A	A	A	M	X	<u>X</u>	xxx1
A	A	A	M	<u>X</u>	X	xxx2
A	A	A	M	<u>X</u>	<u>X</u>	xxx3
A	A	A	<u>M</u>	X	X	xxx4
A	A	A	<u>M</u>	X	<u>X</u>	xxx5
A	A	A	<u>M</u>	<u>X</u>	X	xxx6
A	A	A	<u>M</u>	<u>X</u>	<u>X</u>	xxx7
A	A	<u>A</u>	M	X	X	xxx8
A	A	<u>A</u>	M	X	<u>X</u>	xxx9

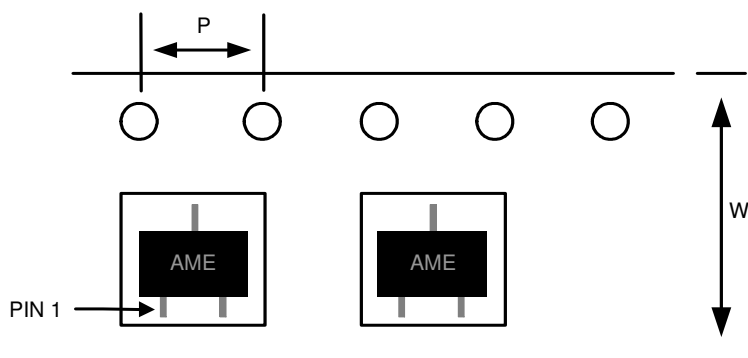
For SC-70 Package Only

Marking			Date Code	Year
A	A	A	W	xxx0
A	A	A	<u>W</u>	xxx1
A	A	<u>A</u>	W	xxx2
A	A	<u>A</u>	<u>W</u>	xxx3
A	<u>A</u>	A	W	xxx4
A	<u>A</u>	A	<u>W</u>	xxx5
A	<u>A</u>	<u>A</u>	W	xxx6
A	<u>A</u>	<u>A</u>	<u>W</u>	xxx7
<u>A</u>	A	A	W	xxx8
<u>A</u>	A	A	<u>W</u>	xxx9

w: Work Week Code		
A: 01&02	K: 21&22	U: 41&42
B: 03&04	L: 23&24	V: 43&44
C: 05&06	M: 25&26	W: 45&46
D: 07&08	N: 27&28	X: 47&48
E: 09&10	O: 29&30	Y: 49&50
F: 11&12	P: 31&32	Z: 51&52
G: 13&14	Q: 33&34	
H: 15&16	R: 35&36	
I: 17&18	S: 37&38	
J: 19&20	T: 39&40	

■ Tape and Reel Dimension

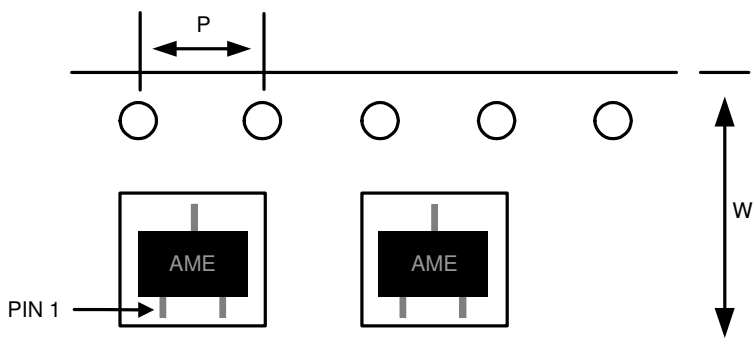
SOT-23



Carrier Tape, Number of Components Per Reel and Reel Size

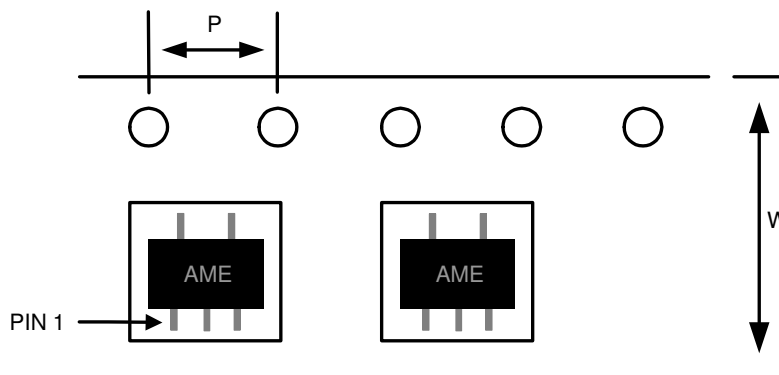
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-23	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

TSOT-23A

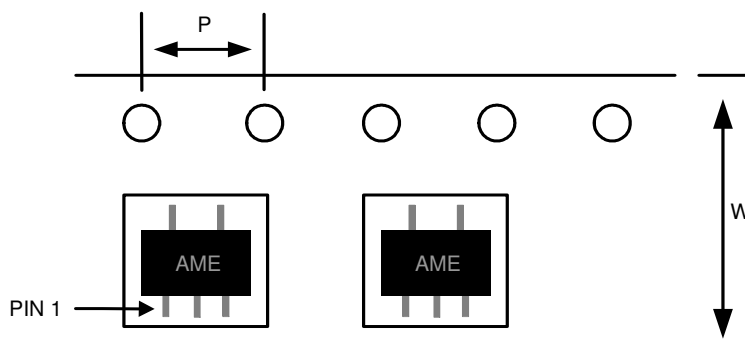


Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TSOT-23A	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

■ Tape and Reel Dimension (Contd.)
SOT-25

Carrier Tape, Number of Components Per Reel and Reel Size

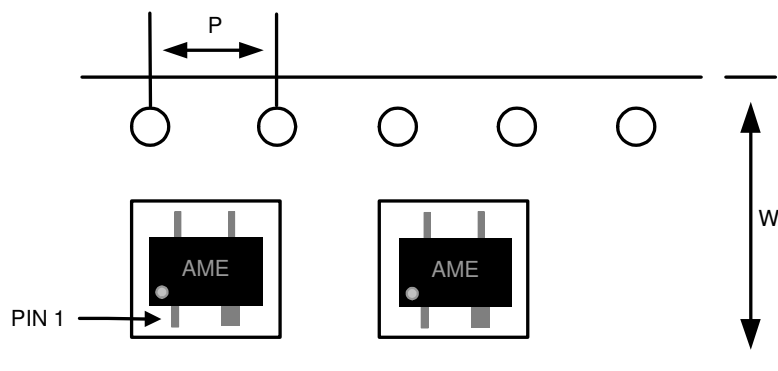
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-25	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

TSOT-25A

Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TSOT-25A	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

■ Tape and Reel Dimension (Contd.)

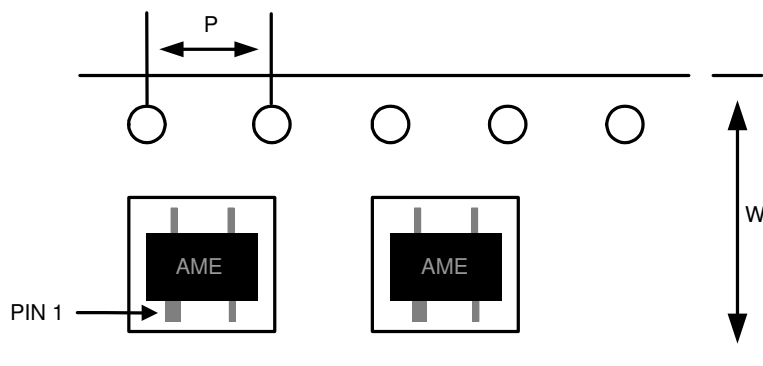
SC-70-4



Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SC-70-4	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

SOT-143

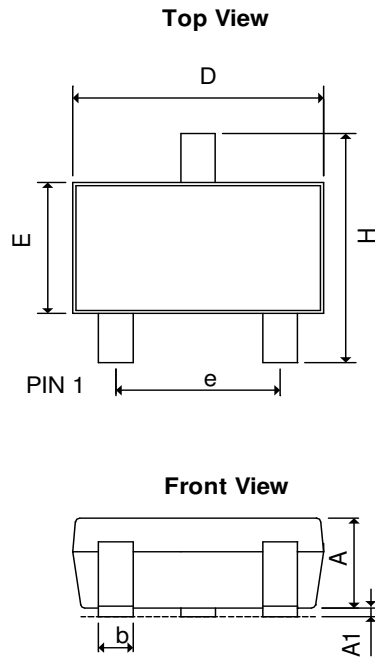


Carrier Tape, Number of Components Per Reel and Reel Size

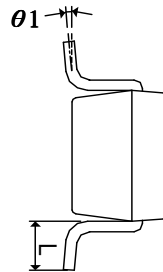
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-143	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

■ Package Dimension

SOT-23

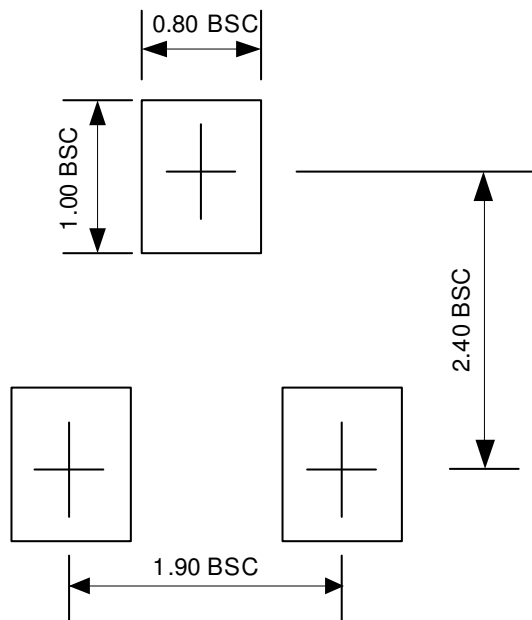


Side View



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.40	0.0354	0.0551
A ₁	0.00	0.15	0.0000	0.0059
b	0.30	0.50	0.0118	0.0197
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.0748 BSC	
H	2.40	3.00	0.0945	0.1181
L	0.35BSC		0.0138 BSC	
θ1	0°	10°	0°	10°

■ Lead Pattern Drawing



Note:

1. Lead pattern unit description:

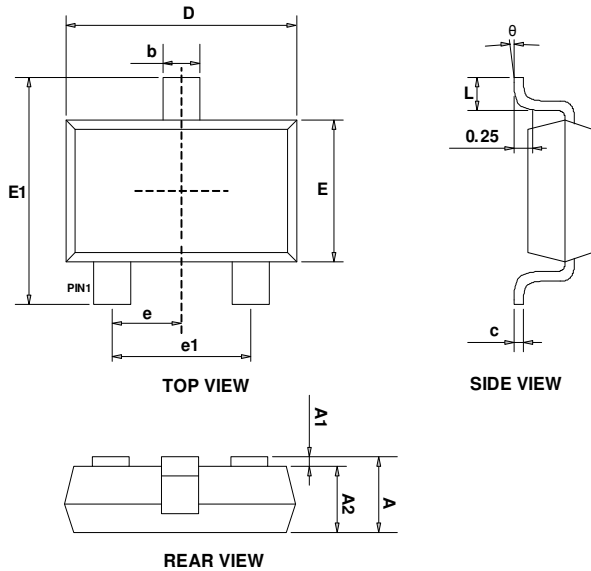
BSC: Basic. Represents theoretical exact dimension or dimension target.

2. Dimensions in Millimeters.

3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified.

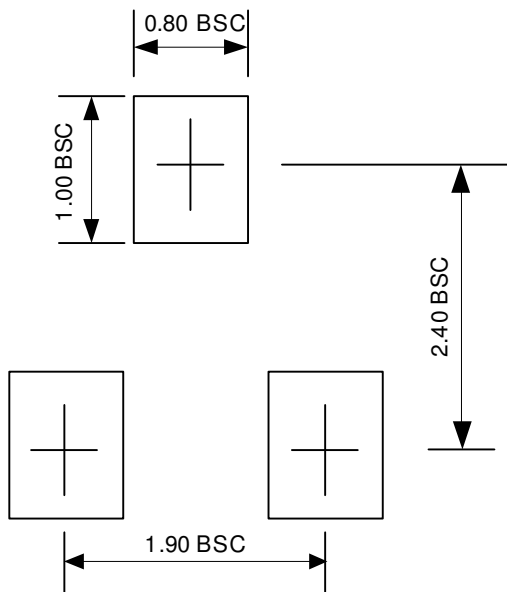
■ Package Dimension

TSOT-23A



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E	1.600	1.700	0.063	0.067
E1	2.650	2.950	0.104	0.116
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

■ Lead Pattern Drawing



Note:

1. Lead pattern unit description:

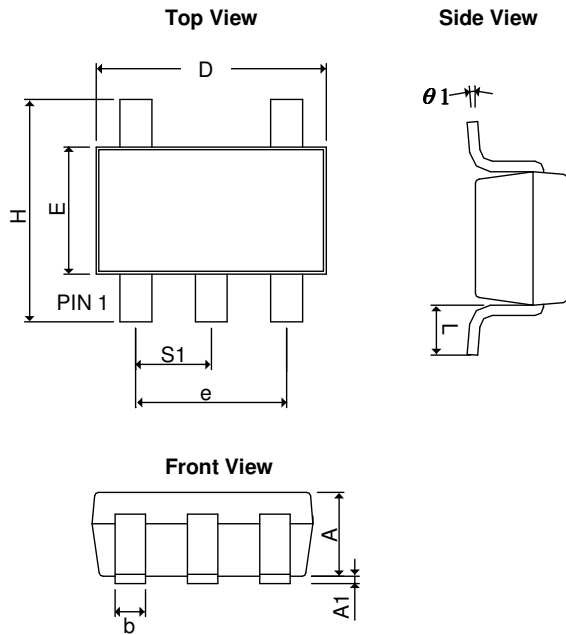
BSC: Basic. Represents theoretical exact dimension or dimension target.

2. Dimensions in Millimeters.

3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified.

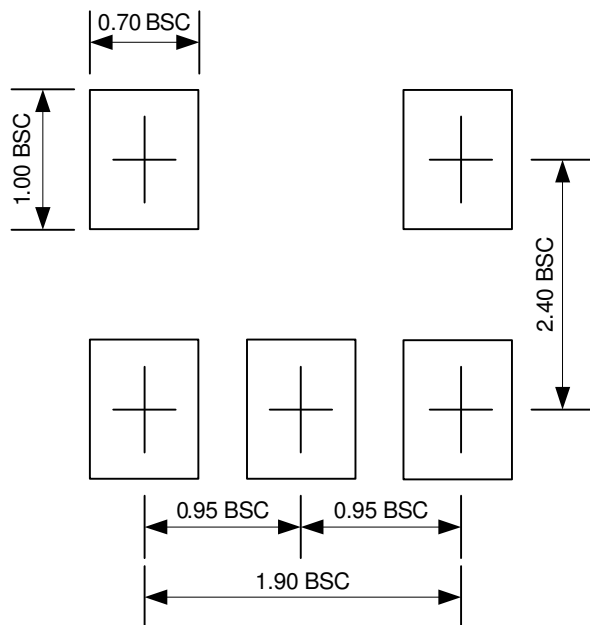
■ Package Dimension (Contd.)

SOT-25



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.30	0.0354	0.0512
A ₁	0.00	0.15	0.0000	0.0059
b	0.30	0.55	0.0118	0.0217
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.0748 BSC	
H	2.60	3.00	0.1024	0.1181
L	0.37 BSC		0.0146 BSC	
$\theta 1$	0°	10°	0°	10°
S ₁	0.95 BSC		0.0374 BSC	

■ Lead Pattern Drawing



Note:

1. Lead pattern unit description:

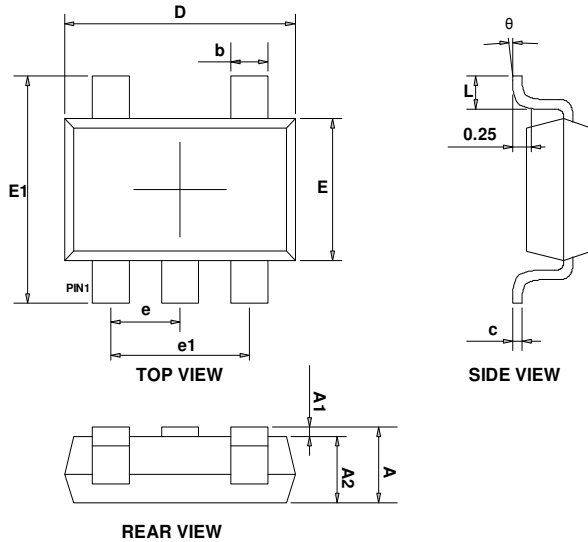
BSC: Basic. Represents theoretical exact dimension or dimension target.

2. Dimensions in Millimeters.

3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified.

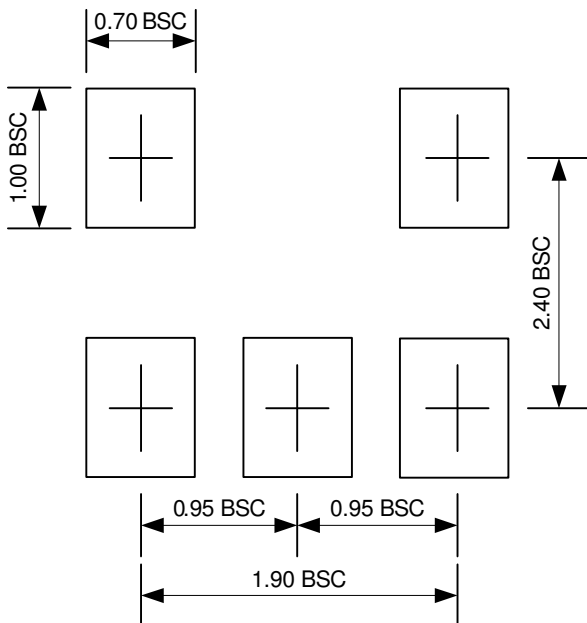
■ Package Dimension (Contd.)

TSOT-25A



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E	1.600	1.700	0.063	0.067
E1	2.650	2.950	0.104	0.116
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

■ Lead Pattern Drawing



Note:

1. Lead pattern unit description:

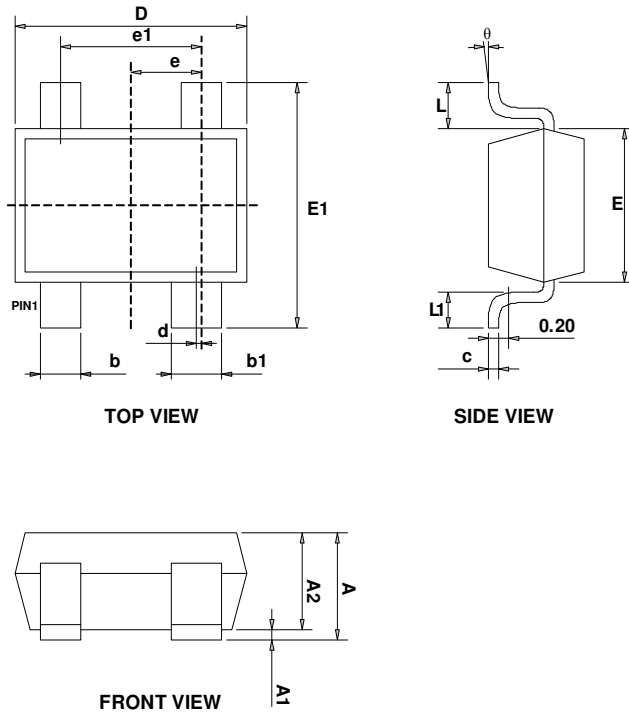
BSC: Basic. Represents theoretical exact dimension or dimension target.

2. Dimensions in Millimeters.

3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified.

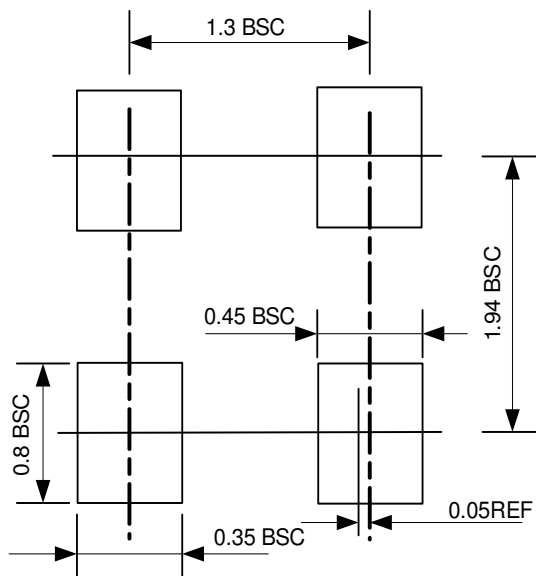
■ Package Dimension (Contd.)

SC-70-4



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.250	0.400	0.010	0.016
b1	0.350	0.500	0.014	0.020
c	0.080	0.150	0.003	0.006
d	0.050 TYP		0.002 TYP	
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

■ Lead Pattern Drawing



Note:

1. Lead pattern unit description:

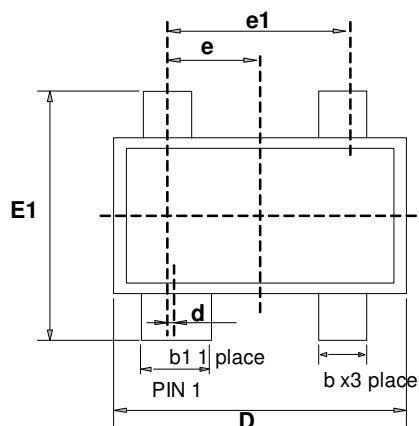
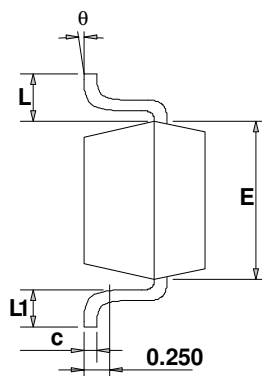
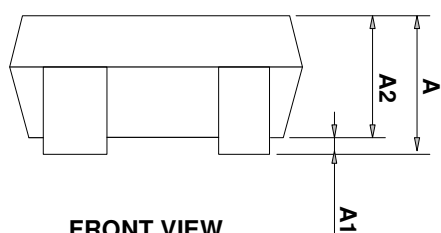
BSC: Basic. Represents theoretical exact dimension or dimension target.

2. Dimensions in Millimeters.

3. General tolerance $\pm 0.05\text{mm}$ unless otherwise specified.

■ Package Dimension (Contd.)

SOT-143


TOP VIEW

SIDE VIEW

FRONT VIEW

SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
b1	0.750	0.900	0.030	0.035
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
d	0.200 TYP		0.008 TYP	
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



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